

## CLAIMS:

1. A method of transforming a computer representation of an N-dimensional first object into a computer model of the first object, characterized in that the computer model transformation comprises the step of generating a cellular space model having a first cell belonging to a first manifold having a dimension which is equal to N, and a second cell belonging to a second manifold having a lower dimension which is equal to N-1 situated on a border of the first manifold, and an edge between the first cell and the second cell to which an indicator is assigned, which indicates whether the second manifold forms part of the border of the first manifold.
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- 10 2. A transformation method as claimed in claim 1, characterized in that a third cell belonging to a third manifold is added to the cellular space model for a computer representation of a second object.
- 15 3. A transformation method as claimed in claim 2, characterized in that a three-dimensional video cube consisting of two-dimensional images associated with consecutive instants and being placed one after the other is partitioned into a first object and a second object, and in that the transformation generates a first cell and a third cell, the dimension of the first manifold and the third manifold being at most three.
- 20 4. A transformation method as claimed in claim 3, characterized in that the transformation assigns a value to the indicator on the basis of a computation of at least one geometrical property, derived from values of the computer representation.
- 25 5. A transformation method as claimed in claim 4, characterized in that the transformation assigns a value to the indicator on the basis of a computation of a change with respect to time of the surface, of a cross-section of the first object with a plane of a two-dimensional image in the video cube at an instant.

6. A compression method of transforming a computer representation of an N-dimensional object into a compression model of the object, characterized in that the transformation makes use of a cellular space model.

5 7. A method of decompressing a compressed video signal to a computer representation of an N-dimensional object, characterized in that the decompression makes use of a cellular space model.

8. A method of transforming a first cellular space model having a first plurality 10 of cells into a second cellular space model having a second plurality of cells, characterized in that the first plurality of cells is different from the second plurality of cells.

9. A computer program for performing a method of transforming a computer representation of an N-dimensional first object into a computer model of the first object, 15 characterized in that the transformation to the computer model comprises the step of generating a cellular space model having a first cell belonging to a first manifold having a dimension which is equal to N, and a second cell belonging to a second manifold having a lower dimension which is equal to N-1 situated on a border of the first manifold, and an edge between the first cell and the second cell to which an indicator is assigned, which indicates 20 whether the second manifold forms part of the border of the first manifold.

10. A computer program for performing a compression method of transforming a computer representation of an N-dimensional object into a compression model of the object, characterized in that the transformation makes use of a cellular space model.

25 11. A computer program for performing a method of decompressing a compressed video signal to a computer representation of an N-dimensional object, characterized in that the decompression makes use of a cellular space model.

30 12. An apparatus for transforming a computer representation of an N-dimensional first object into a computer model of the first object, the apparatus comprising

- acquiring means for acquiring the computer representation of the first object;
- processing means for transforming the computer representation of the first object; and

- output means for outputting the computer model,  
characterized in that the processing means are capable of  
- generating a cellular space model with a first cell belonging to a first manifold  
having a dimension which is equal to N, and a second cell belonging to a second manifold  
5 having a lower dimension which is equal to N-1 situated on the border of the first manifold,  
and an edge between the first cell and the second cell, and are capable of  
- assigning an indicator to the edge, which indicates whether the second  
manifold forms part of the border of the first manifold.

10 13. A video decompression apparatus for decompressing a compressed video signal to a computer representation of an N-dimensional object, the video decompression apparatus comprising:

- acquiring means for acquiring the compressed video signal;  
- processing means for generating the computer representation on the basis of  
15 the compressed video signal, and  
- output means for outputting the computer representation,  
characterized in that the processing means have access to a cellular space model.

14. A data representation comprising a cellular space for representing a digitized  
20 N-dimensional object, characterized in that an indicator is assigned to an edge between a first cell and a second cell of the cellular space, which indicator indicates whether the second manifold having a lower dimension forms part of a first manifold having a higher dimension, said first and second manifolds being represented by the first and the second cell, respectively.